Massachusetts Compliance 1998 Puff by Puff "pH" Results

Puff#	Benson and	d Hedges 10	00 Menthol	- BH8M	Puff#	Benson and	d Hedges Li	ghts 100 M	lenthol - BL8M
	08/25/98	08/25/98	Average	Std. dev.		08/25/98	08/25/98	Average	Std. dev.
1	5.0	5.1	5.0	0.05	1	5.0	5.5	5.3	0.36
2	5.2	5.0	5.1	0.19	2	5.2	5.3	5.2	0.11
3	5.0	5.2	5.1	0.15	3	5.1	5.4	5.2	0.25
4	5.1	5.0	5.1	0.08	4	5.2	5.2	5.2	0.02
5	5.0	5.1	5.1	80.0	5	5.0	5.3	5.2	0.23
6	5.1	5.0	5.0	0.06	6	5.3	5.2	5.3	0.04
7	4.9	5.1	5.0	0.12	7	5.0	5.3	5.2	0.20
8	5.3	4.9	5.1	0.23	8	5.2	5.2	5.2	0.02
9	5.0	5.1	5.0	0.06	9	5.0	5.3	5.2	0.21
10	5.2	4.9	5.1	0.20	10	5.1	5.0	5.1	0.07
11	4.9	5.1	5.0	0.13	11	5.0	5.5	5.3	0.39
12	5.1	4.9	5.0	0.13	12	5.2	5.4	5.3	0.10
13	5.0	5.0	5.0	0.04	13	5.0	5.3	5.2	0.28
_					_				
Average			5.0		Average			5.2	
Std dev.			0.05		Std dev	•		0.06	
Puff#	Benson and	d Hedges D	eluxe Ultra	Lights 100	Box - BU8B Puff#	Merit 100 -	ME8		
Puff#		d <u>Hedges D</u> 08/26/98			Box - BU8B Puff#	Merit 100 - 08/26/98		Average	Std. dev.
Puff# 1				Lights 100 Std. dev. 0.01	<u>Box - BU8B</u> Puff# 1			Average 5.2	Std. dev. 0.01
1 2	08/26/98	08/26/98	Average	Std. dev.	1	08/26/98	08/26/98		
1	08/26/98 5.3	08/26/98 5.3	Average 5.3	Std. dev. 0.01		08/26/98 5.2	08/26/98 5.2	5.2	0.01
1 2 3 4	08/26/98 5.3 5.5	08/26/98 5.3 5.1	Average 5.3 5.3	Std. dev. 0.01 0.28	1 2	08/26/98 5.2 5.4	08/26/98 5.2 5.2	5.2 5.3	0.01 0.15
1 2 3 4 5	08/26/98 5.3 5.5 5.2	08/26/98 5.3 5.1 5.6	Average 5.3 5.3 5.4	Std. dev. 0.01 0.28 0.28	1 2 3	08/26/98 5.2 5.4 5.1	08/26/98 5.2 5.2 5.0	5.2 5.3 5.1	0.01 0.15 0.09
1 2 3 4 5 6	08/26/98 5.3 5.5 5.2 5.2 5.3 5.0	08/26/98 5.3 5.1 5.6 5.3	Average 5.3 5.3 5.4 5.3	Std. dev. 0.01 0.28 0.28 0.07	1 2 3 4 5 6	08/26/98 5.2 5.4 5.1 5.0	08/26/98 5.2 5.2 5.0 5.1	5.2 5.3 5.1 5.1	0.01 0.15 0.09 0.03
1 2 3 4 5 6 7	08/26/98 5.3 5.5 5.2 5.2 5.3 5.0 5.2	08/26/98 5.3 5.1 5.6 5.3 5.2 5.2 5.2	Average 5.3 5.3 5.4 5.3 5.3	Std. dev. 0.01 0.28 0.28 0.07 0.10	1 2 3 4 5	08/26/98 5.2 5.4 5.1 5.0 5.2	08/26/98 5.2 5.2 5.0 5.1 5.2	5.2 5.3 5.1 5.1 5.2	0.01 0.15 0.09 0.03 0.04
1 2 3 4 5 6 7 8	08/26/98 5.3 5.5 5.2 5.2 5.3 5.0 5.2 5.1	08/26/98 5.3 5.1 5.6 5.3 5.2 5.2 5.0 5.1	5.3 5.3 5.4 5.3 5.3 5.1 5.1	Std. dev. 0.01 0.28 0.28 0.07 0.10 0.13 0.14 0.04	1 2 3 4 5 6	08/26/98 5.2 5.4 5.1 5.0 5.2 5.0	08/26/98 5.2 5.2 5.0 5.1 5.2 5.4	5.2 5.3 5.1 5.1 5.2 5.2	0.01 0.15 0.09 0.03 0.04 0.24
1 2 3 4 5 6 7	08/26/98 5.3 5.5 5.2 5.2 5.3 5.0 5.2 5.1	08/26/98 5.3 5.1 5.6 5.3 5.2 5.2 5.2	5.3 5.3 5.4 5.3 5.3 5.1 5.1	Std. dev. 0.01 0.28 0.28 0.07 0.10 0.13 0.14	1 2 3 4 5 6 7	08/26/98 5.2 5.4 5.1 5.0 5.2 5.0 5.2	08/26/98 5.2 5.2 5.0 5.1 5.2 5.4 5.1	5.2 5.3 5.1 5.1 5.2 5.2 5.2	0.01 0.15 0.09 0.03 0.04 0.24 0.04
1 2 3 4 5 6 7 8	08/26/98 5.3 5.5 5.2 5.2 5.3 5.0 5.2 5.1	08/26/98 5.3 5.1 5.6 5.3 5.2 5.2 5.0 5.1	5.3 5.3 5.4 5.3 5.3 5.1 5.1	Std. dev. 0.01 0.28 0.28 0.07 0.10 0.13 0.14 0.04	1 2 3 4 5 6 7 8	08/26/98 5.2 5.4 5.1 5.0 5.2 5.0 5.2 5.1	08/26/98 5.2 5.2 5.0 5.1 5.2 5.4 5.1 5.2	5.2 5.3 5.1 5.2 5.2 5.1 5.2	0.01 0.15 0.09 0.03 0.04 0.24 0.04 0.10
1 2 3 4 5 6 7 8 9	08/26/98 5.3 5.5 5.2 5.2 5.3 5.0 5.2 5.1	08/26/98 5.3 5.1 5.6 5.3 5.2 5.2 5.0 5.1 5.1 5.1	5.3 5.3 5.4 5.3 5.3 5.1 5.1 5.1 5.1	Std. dev. 0.01 0.28 0.28 0.07 0.10 0.13 0.14 0.04 0.39	1 2 3 4 5 6 7 8	08/26/98 5.2 5.4 5.1 5.0 5.2 5.0 5.2 5.1 5.3	08/26/98 5.2 5.2 5.0 5.1 5.2 5.4 5.1 5.2 5.1	5.2 5.3 5.1 5.2 5.2 5.1 5.2 5.2	0.01 0.15 0.09 0.03 0.04 0.24 0.04 0.10 0.09
1 2 3 4 5 6 7 8 9	08/26/98 5.3 5.5 5.2 5.2 5.3 5.0 5.2 5.1 5.6	08/26/98 5.3 5.1 5.6 5.3 5.2 5.2 5.0 5.1 5.1	5.3 5.3 5.4 5.3 5.3 5.1 5.1 5.1 5.3 5.1	Std. dev. 0.01 0.28 0.28 0.07 0.10 0.13 0.14 0.04 0.39	1 2 3 4 5 6 7 8 9	08/26/98 5.2 5.4 5.1 5.0 5.2 5.0 5.2 5.1 5.3	08/26/98 5.2 5.2 5.0 5.1 5.2 5.4 5.1 5.2 5.1	5.2 5.3 5.1 5.2 5.2 5.1 5.2 5.2 5.2	0.01 0.15 0.09 0.03 0.04 0.24 0.04 0.10 0.09 0.20
1 2 3 4 5 6 7 8 9 10	08/26/98 5.3 5.5 5.2 5.2 5.3 5.0 5.2 5.1 5.6 5.1	08/26/98 5.3 5.1 5.6 5.3 5.2 5.2 5.0 5.1 5.1 5.1	5.3 5.3 5.4 5.3 5.3 5.1 5.1 5.3 5.1 5.2	Std. dev. 0.01 0.28 0.28 0.07 0.10 0.13 0.14 0.04 0.39 0.00 0.14	1 2 3 4 5 6 7 8 9 10	08/26/98 5.2 5.4 5.1 5.0 5.2 5.0 5.2 5.1 5.3 5.1	08/26/98 5.2 5.2 5.0 5.1 5.2 5.4 5.1 5.2 5.1 5.4 5.1	5.2 5.3 5.1 5.2 5.2 5.1 5.2 5.2 5.3 5.1	0.01 0.15 0.09 0.03 0.04 0.24 0.04 0.10 0.09 0.20 0.02
1 2 3 4 5 6 7 8 9 10 11	08/26/98 5.3 5.5 5.2 5.2 5.3 5.0 5.2 5.1 5.6 5.1	08/26/98 5.3 5.1 5.6 5.3 5.2 5.2 5.0 5.1 5.1 5.1	5.3 5.3 5.4 5.3 5.1 5.1 5.1 5.3 5.1 5.2 5.1	Std. dev. 0.01 0.28 0.28 0.07 0.10 0.13 0.14 0.04 0.39 0.00 0.14	1 2 3 4 5 6 7 8 9 10 11 12 13	08/26/98 5.2 5.4 5.1 5.0 5.2 5.0 5.2 5.1 5.3 5.1 5.0 5.4	08/26/98 5.2 5.2 5.0 5.1 5.2 5.4 5.1 5.2 5.1 5.4 5.1	5.2 5.3 5.1 5.2 5.2 5.2 5.2 5.3 5.1 5.3 5.0	0.01 0.15 0.09 0.03 0.04 0.24 0.04 0.10 0.09 0.20 0.02 0.17
1 2 3 4 5 6 7 8 9 10	08/26/98 5.3 5.5 5.2 5.2 5.3 5.0 5.2 5.1 5.6 5.1	08/26/98 5.3 5.1 5.6 5.3 5.2 5.2 5.0 5.1 5.1 5.1	5.3 5.3 5.4 5.3 5.3 5.1 5.1 5.3 5.1 5.2	Std. dev. 0.01 0.28 0.28 0.07 0.10 0.13 0.14 0.04 0.39 0.00 0.14	1 2 3 4 5 6 7 8 9 10 11	08/26/98 5.2 5.4 5.1 5.0 5.2 5.0 5.2 5.1 5.3 5.1 5.0 5.4	08/26/98 5.2 5.2 5.0 5.1 5.2 5.4 5.1 5.2 5.1 5.4 5.1	5.2 5.3 5.1 5.2 5.2 5.1 5.2 5.3 5.1 5.3	0.01 0.15 0.09 0.03 0.04 0.24 0.04 0.10 0.09 0.20 0.02 0.17

Massachusetts Compliance 1998 Puff by Puff "pH" Results

Puff#	Merit Ultra			0	Puff#	Merit Ultima			0.1.1
	08/27/98	08/27/98	Average	Std. dev.			08/27/98	Average	
1	5.6	5.1	5.4	0.37	1	5.3	5.3	5.3	0.02
2	5.1	5.4	5.3	0.17	2	5.2	5.5	5.3	0.22
3	5.3	5.1	5.2	0.12	3	5.5	5.1	5.3	0.30
4	5.1	5.2	5.1	0.07	4	5.1	5.5	5.3	0.27
5	5.2	5.1	5.2	0.01	5	5.3	5.1	5.2	0.12
6	4.9	5.4	5.1	0.32	6	5.2	5.3	5.2	0.07
7	5.2	5.0	5.1	0.11	7	5.2	5.2	5.2	0.02
8	5.1	5.2	5.2	0.05	8	5.0	5.3	5.2	0.17
9	5.2	5.1	5.2	0.06	9	5.3	5.0	5.2	0.17
10	5.1	5.2	5.1	0.10					
11	5.1	5.0	5.0	0.12					
12	5.0	5.1	5.1	0.11					
13	5.1	5.2	5.2	0.03					
Avorono			5.2		Augraga			5.2	
Average Std dev.			0.08		Average Std dev.			0.08	
Sid dev.			0.00		Std dev.			0.08	
Puff#	Virginia Slir	ns 100 - VA	. 8		Puff#	Virginia Slir	ns Liahts 10	00 Box - V	38B
Puff#	Virginia Slir 08/28/98			Std. dev.	Puff#	Virginia Slir 08/31/98			
	08/28/98	08/28/98	Average	Std. dev. 0.02		08/31/98	08/31/98	Average	Std. dev.
1	08/28/98 5.3	08/28/98 5.2	Average 5.2	0.02	1	08/31/98 5.2	08/31/98 5.2	Average 5.2	Std. dev. 0.04
1 2	08/28/98 5.3 5.1	08/28/98 5.2 5.2	Average 5.2 5.2		1 2	08/31/98 5.2 5.2	08/31/98 5.2 5.0	Average 5.2 5.1	Std. dev. 0.04 0.13
1	08/28/98 5.3	08/28/98 5.2 5.2 5.1	Average 5.2	0.02 0.04	1 2 3	08/31/98 5.2 5.2 5.3	08/31/98 5.2 5.0 5.0	Average 5.2 5.1 5.2	Std. dev. 0.04 0.13 0.21
1 2 3 4	08/28/98 5.3 5.1 5.2	08/28/98 5.2 5.2 5.1 5.3	Average 5.2 5.2 5.1 5.1	0.02 0.04 0.06	1 2 3 4	08/31/98 5.2 5.2 5.3 5.1	08/31/98 5.2 5.0 5.0 4.9	Average 5.2 5.1 5.2 5.0	Std. dev. 0.04 0.13 0.21 0.18
1 2 3 4 5	08/28/98 5.3 5.1 5.2 5.0 5.5	08/28/98 5.2 5.2 5.1 5.3 5.2	5.2 5.2 5.1 5.1 5.3	0.02 0.04 0.06 0.19	1 2 3	08/31/98 5.2 5.2 5.3 5.1 5.4	08/31/98 5.2 5.0 5.0 4.9 5.1	Average 5.2 5.1 5.2 5.0 5.2	Std. dev. 0.04 0.13 0.21 0.18 0.19
1 2 3 4	08/28/98 5.3 5.1 5.2 5.0	08/28/98 5.2 5.2 5.1 5.3 5.2 5.3	5.2 5.2 5.1 5.1 5.3 5.1	0.02 0.04 0.06 0.19 0.23	1 2 3 4 5	08/31/98 5.2 5.2 5.3 5.1 5.4 5.4	08/31/98 5.2 5.0 5.0 4.9 5.1 5.1	Average 5.2 5.1 5.2 5.0 5.2 5.3	Std. dev. 0.04 0.13 0.21 0.18 0.19 0.19
1 2 3 4 5 6 7	08/28/98 5.3 5.1 5.2 5.0 5.5 4.9 5.2	08/28/98 5.2 5.2 5.1 5.3 5.2 5.3 4.9	5.2 5.2 5.1 5.1 5.3 5.1 5.1	0.02 0.04 0.06 0.19 0.23 0.28	1 2 3 4 5 6 7	08/31/98 5.2 5.2 5.3 5.1 5.4 5.4 5.3	08/31/98 5.2 5.0 5.0 4.9 5.1 5.1	Average 5.2 5.1 5.2 5.0 5.2 5.3 5.2	Std. dev. 0.04 0.13 0.21 0.18 0.19 0.19 0.16
1 2 3 4 5 6 7 8	08/28/98 5.3 5.1 5.2 5.0 5.5 4.9	08/28/98 5.2 5.2 5.1 5.3 5.2 5.3 4.9 5.2	5.2 5.2 5.1 5.1 5.3 5.1 5.1 5.1	0.02 0.04 0.06 0.19 0.23 0.28 0.21	1 2 3 4 5 6	08/31/98 5.2 5.2 5.3 5.1 5.4 5.4 5.3	08/31/98 5.2 5.0 5.0 4.9 5.1 5.1 5.1	Average 5.2 5.1 5.2 5.0 5.2 5.3 5.2 5.3	Std. dev. 0.04 0.13 0.21 0.18 0.19 0.19 0.16 0.15
1 2 3 4 5 6 7 8	08/28/98 5.3 5.1 5.2 5.0 5.5 4.9 5.2 5.1	08/28/98 5.2 5.2 5.1 5.3 5.2 5.3 4.9 5.2 5.1	5.2 5.2 5.1 5.1 5.3 5.1 5.1 5.1	0.02 0.04 0.06 0.19 0.23 0.28 0.21	1 2 3 4 5 6 7 8 9	08/31/98 5.2 5.2 5.3 5.1 5.4 5.4 5.3 5.4	08/31/98 5.2 5.0 5.0 4.9 5.1 5.1 5.1 5.2	Average 5.2 5.1 5.2 5.0 5.2 5.3 5.2 5.3 5.3	Std. dev. 0.04 0.13 0.21 0.18 0.19 0.19 0.16 0.15 0.24
1 2 3 4 5 6 7 8 9	08/28/98 5.3 5.1 5.2 5.0 5.5 4.9 5.2 5.1 5.2 5.0	08/28/98 5.2 5.2 5.1 5.3 5.2 5.3 4.9 5.2 5.1	5.2 5.2 5.1 5.1 5.3 5.1 5.1 5.1 5.1	0.02 0.04 0.06 0.19 0.23 0.28 0.21 0.09 0.13	1 2 3 4 5 6 7 8 9	08/31/98 5.2 5.2 5.3 5.1 5.4 5.4 5.3 5.4 5.4	08/31/98 5.2 5.0 5.0 4.9 5.1 5.1 5.1 5.2 5.1	Average 5.2 5.1 5.2 5.0 5.2 5.3 5.2 5.3 5.3	Std. dev. 0.04 0.13 0.21 0.18 0.19 0.19 0.16 0.15 0.24
1 2 3 4 5 6 7 8 9 10 11	08/28/98 5.3 5.1 5.2 5.0 5.5 4.9 5.2 6.1	08/28/98 5.2 5.2 5.1 5.3 5.2 5.3 4.9 5.2 5.1	5.2 5.2 5.1 5.1 5.3 5.1 5.1 5.1	0.02 0.04 0.06 0.19 0.23 0.28 0.21 0.09 0.13	1 2 3 4 5 6 7 8 9	08/31/98 5.2 5.2 5.3 5.1 5.4 5.4 5.3 5.4	08/31/98 5.2 5.0 5.0 4.9 5.1 5.1 5.1 5.2 5.1 5.3	Average 5.2 5.1 5.2 5.0 5.2 5.3 5.2 5.3 5.4 5.3	Std. dev. 0.04 0.13 0.21 0.18 0.19 0.19 0.16 0.15 0.24 0.05 0.15
1 2 3 4 5 6 7 8 9	08/28/98 5.3 5.1 5.2 5.0 5.5 4.9 5.2 5.1 5.2 5.0 5.2	08/28/98 5.2 5.2 5.1 5.3 5.2 5.3 4.9 5.2 5.1 5.1	5.2 5.2 5.1 5.1 5.3 5.1 5.1 5.1 5.1 5.1	0.02 0.04 0.06 0.19 0.23 0.28 0.21 0.09 0.13 0.07	1 2 3 4 5 6 7 8 9 10 11	08/31/98 5.2 5.2 5.3 5.1 5.4 5.4 5.4 5.4 5.4 5.4	08/31/98 5.2 5.0 5.0 4.9 5.1 5.1 5.1 5.2 5.1	Average 5.2 5.1 5.2 5.0 5.2 5.3 5.2 5.3 5.3	Std. dev. 0.04 0.13 0.21 0.18 0.19 0.19 0.16 0.15 0.24
1 2 3 4 5 6 7 8 9 10 11	08/28/98 5.3 5.1 5.2 5.0 5.5 4.9 5.2 5.1 5.2 5.0 5.2	08/28/98 5.2 5.2 5.1 5.3 5.2 5.3 4.9 5.2 5.1 5.1	5.2 5.2 5.1 5.1 5.3 5.1 5.1 5.1 5.1 5.1 5.4	0.02 0.04 0.06 0.19 0.23 0.28 0.21 0.09 0.13 0.07	1 2 3 4 5 6 7 8 9 10 11	08/31/98 5.2 5.2 5.3 5.1 5.4 5.4 5.4 5.4 5.4 5.4	08/31/98 5.2 5.0 5.0 4.9 5.1 5.1 5.1 5.2 5.1 5.3	Average 5.2 5.1 5.2 5.0 5.2 5.3 5.2 5.3 5.4 5.3 5.2	Std. dev. 0.04 0.13 0.21 0.18 0.19 0.19 0.16 0.15 0.24 0.05 0.15
1 2 3 4 5 6 7 8 9 10 11 12	08/28/98 5.3 5.1 5.2 5.0 5.5 4.9 5.2 5.1 5.2 5.0 5.2	08/28/98 5.2 5.2 5.1 5.3 5.2 5.3 4.9 5.2 5.1 5.1	5.2 5.2 5.1 5.1 5.3 5.1 5.1 5.1 5.1 5.1 5.4	0.02 0.04 0.06 0.19 0.23 0.28 0.21 0.09 0.13 0.07	1 2 3 4 5 6 7 8 9 10 11 12	08/31/98 5.2 5.2 5.3 5.1 5.4 5.4 5.4 5.4 5.4 5.4	08/31/98 5.2 5.0 5.0 4.9 5.1 5.1 5.1 5.2 5.1 5.3	Average 5.2 5.1 5.2 5.0 5.2 5.3 5.2 5.3 5.4 5.3 5.2	Std. dev. 0.04 0.13 0.21 0.18 0.19 0.19 0.16 0.15 0.24 0.05 0.15
1 2 3 4 5 6 7 8 9 10 11	08/28/98 5.3 5.1 5.2 5.0 5.5 4.9 5.2 5.1 5.2 5.0 5.2	08/28/98 5.2 5.2 5.1 5.3 5.2 5.3 4.9 5.2 5.1 5.1	5.2 5.2 5.1 5.1 5.3 5.1 5.1 5.1 5.1 5.1 5.4	0.02 0.04 0.06 0.19 0.23 0.28 0.21 0.09 0.13 0.07	1 2 3 4 5 6 7 8 9 10 11	08/31/98 5.2 5.2 5.3 5.1 5.4 5.4 5.4 5.4 5.4 5.4	08/31/98 5.2 5.0 5.0 4.9 5.1 5.1 5.1 5.2 5.1 5.3	Average 5.2 5.1 5.2 5.0 5.2 5.3 5.2 5.3 5.4 5.3 5.2	Std. dev. 0.04 0.13 0.21 0.18 0.19 0.19 0.16 0.15 0.24 0.05 0.15

Massachusetts Compliance 1998 Puff by Puff "pH" Results

Puff#	Virginia Slir	ns Ultra Lig	hts 100 Bo	<u>x - VI8B</u>	Puff#	Parliament Lights KSF Box - PR4B			
	09/01/98	09/01/98	Average	Std. dev.		09/01/98	09/01/98	Average	Std. dev.
1	5.3	5.0	5.2	0.24	1	5.0	4.9	5.0	0.07
2	5.3	5.2	5.2	0.05	2	5.1	5.1	5.1	0.01
3	5.2	5.2	5.2	0.00	3	5.2	5.2	5.2	0.00
4	5.2	5.2	5.2	0.01	4	5.0	5.1	5.1	0.06
5	5.2	5.2	5.2	0.01	5	5.2	5.1	5.2	0.09
6	5.2	5.1	5.1	0.12	6	5.2	5.1	5.1	0.04
7	5.1	5.2	5.2	0.08	7	5.2	5.0	5.1	0.10
8	5.1	5.1	5.1	0.02	8	5.1	5.2	5.2	0.05
9	5.0	5.2	5.1	0.14	9	5.2	5.2	5.2	0.03
10	5.1	5.1	5.1	0.01					
11	5.1	5.1	5.1	0.02					
12	5.1	5.1	5.1	0.05					
13	5.1	5.1	5.1	0.03					
Average			5.2		Average			5.1	
Std dev.			0.05		Std dev.			0.07	